

The Mutual Separation of  $^{227}\text{Ac}$ ,  $^{227}\text{Th}$ ,  
 $^{223}\text{Ra}$ , and  $^{223}\text{Fr}$  by the Solvent  
Extraction Technique Using  
Bis(2-ethylhexyl)phosphoric Acid as an  
Extractant (Chemistry)

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## **Thermal Decomposition Process of Zirconium Oxide Chloride Octahydrate (Part 2)**

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Nippon Kagaku Kaishi (J. Chem. Soc. Jap.), (1977), 1448.

The thermal decomposition process of  $\text{ZrOCl}_2 \cdot 8\text{H}_2\text{O}$  was investigated under the condition that the sample was thermally equilibrated to its generated atmosphere. After the sample was heated up to a prescribed temperature, X-ray diffraction patterns, IR spectra at 85°K, far-infrared spectra, and the residual quantity of chlorine in it were measured. The X-ray diffraction patterns are found to be classified into the following three types, each of which is elucidated on the basis of the present and the previous results. Type I: Observed on the sample heated below 66.5°C. Change of the intensity of the diffraction patterns seems to be reversible due to the reversible dehydration of three molecules of lattice water. Type II: Observed for the sample heated to 78~80°C. The intermediate state of transition from Type I to Type III. It is the stage of 4-hydrated species' formation accompanying a remarkable change of crystal structure. Type III: Observed for the sample heated in the range from 97°C to 185°C. Dechlorination occurs but the relative intensity of diffraction pattern changes slightly, indicating the crystal structure not affected by dechlorination.

## **Distribution of Some Trivalent Ions between Melt and Single Crystals of $\text{Mg}_2\text{SiO}_4$ Grown by the Czochralski Method**

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Earth Planet. Sci. Lett., **36** (1977), 231.

Partition coefficients for trace amounts of trivalent ions between artificial single crystals of  $\text{Mg}_2\text{SiO}_4$  grown by the Czochralski method and the coexisting melt have been determined by neutron activation analysis. They are found to vary greatly with the amount of visible imperfections in the crystal and slightly with the concentration of the ions in the melt. Plots of the partition coefficients against ionic radius of the trace ions give a pattern which agrees qualitatively with that found in a natural olivine phenocryst-groundmass pair.

## **The Mutual Separation of $^{227}\text{Ac}$ , $^{227}\text{Th}$ , $^{223}\text{Ra}$ , and $^{223}\text{Fr}$ by the Solvent Extraction Technique Using Bis(2-ethylhexyl)phosphoric Acid as an Extractant**

Toshiaki MITSUGASHIRA, Hajimu YAMANA and Shin SUZUKI

Bull. Chem. Soc. Jap., **50** (1977), 2913.

The separation and purification of  $^{227}\text{Ac}$ ,  $^{227}\text{Th}$ ,  $^{223}\text{Ra}$ , and  $^{223}\text{Fr}$  were studied by the solvent extraction method using HDEHP (bis(2-ethylhexyl)phosphoric acid) as an extractant. The mutual separation of Ac, Th, and Ra was achieved, and new milking processes for  $^{223}\text{Fr}$  and  $^{228}\text{Ac}$  are presented.